Check List 2007: **3**(3)
ISSN: 1809-127X

NOTES ON GEOGRAPHIC DISTRIBUTION

Mammalia, Chiroptera, Phyllostomidae, *Diaemus youngi*: First confirmed record for Ecuador and observations of its presence in museum collections.

C. Miguel Pinto[1,2]
Juan P. Carrera[2]
Hugo Mantilla-Meluk[1]
Robert J. Baker[1, 2]

[1]*Department of Biological Sciences, Texas Tech University. Lubbock TX, 79409-3131.*
E-mail: miguel.pinto@ttu.edu

[2]*Museum of Texas Tech University. Lubbock TX, 79409*

Diaemus youngi, the white-winged vampire bat, is the locally rarest of the three species of vampire bats (Koopman 1988). This species is widely distributed in the lowlands of the Neotropical region, from Tamaulipas, Mexico south to western Colombia, and on the lowlands of the eastern versant of the Andes from northern Argentina, Paraguay and eastern Brazil north to the Guyanas and Venezuela. Although this is a wide distribution, few records are available throughout this range. Most of the records are from the Amazon Basin, with absence of confirmed records in some countries of Central America (i.e. Guatemala and Belize) and South America (i.e. Ecuador) (Aguiar et al. 2006; Greenhall and Schutt 1996; Koopman 1988). Here we report the first record for the species in Ecuador.

A specimen of *Diaemus youngi* was collected on 3 August 2001 during the Sowell expedition to northwestern Ecuador. This specimen, an adult male prepared as skin, skull and tissues, is deposited in the Museum of Texas Tech University, with accession numbers TTU 85358 and TK 104586, and collector number RF-45 (René M. Fonseca). Ultimately, this specimen will be deposited in the Museo de Zoología, Pontificia Universidad Católica del Ecuador (QCAZ). External and cranial measurements (in mm) of the specimen are: total length, 85; hindfoot length, 17; ear length, 12.80; forearm length, 52.96; metacarpal III length, 53.41; greatest length of the skull (no incisors included), 25.49; condylobasal length, 22.89; zigomatic breadth, 14.28; mastoid breadth, 13.25; braincase breadth, 13.27; braincase height, 12.42; palatal length, 7.70; postpalatal length, 10.82; postorbital constriction, 6.67; interorbital breadth, 7.42; breadth across molars, 7.23; breadth across canines, 6.64; maxillary tooth row length, 3.37; coronoid process length, 8.06; mandibulary length, 16.01. Body weight, 42.9 g. These measurements are within the known range for the species, although they are above the mean known for males (Greenhall and Schutt 1996; López-Forment and Téllez-Girón 2005; Swanepoel and Genoways 1979).

This individual has the typical diagnostic features of *Diaemus youngi* (Koopman 1988; Greenhall and Schutt 1996) including: white wing tips; thumbs with a single pad under metacarpal and shorter than in *Desmodus rotundus*; skull more robust than in *D. rotundus*; and postorbital constriction less conspicuous than in *D. rotundus*. The salivary glands were visible outside the mouth when animal was disturbed, similar to that reported by Greenhall and Schutt (1996). For additional information on the morphology and natural history of the three species of vampire bats see Greenhall and Schmidt (1988). Additionally, the ultrastructure of the submandibular gland of the specimen included in this report (TTU 85358; TK 104586) was described by Tandler and Phillips (2002). This bat also differs substantially from *D. rotundus* in gland morphology (Tandler et al. 1990).

The specimen of *Diaemus youngi* was collected east of the town of San Lorenzo, province of Esmeraldas, in northwestern Ecuador (01°17' N, 78°50' W; 53 m) (Figure 1). The collection site was in a small farm, with patches of banana plants, other cultivable trees, and introduced plants typically associated with residencies in western Ecuador. A few chickens were present in the yard of the residency. This property is about 1 km west of a fragment of secondary Chocoan forest. *Diaemus youngi* was captured under fruit trees with a mist net approximately 1.5 m above the ground.

Check List 2007: **3**(3)
ISSN: 1809-127X

NOTES ON GEOGRAPHIC DISTRIBUTION

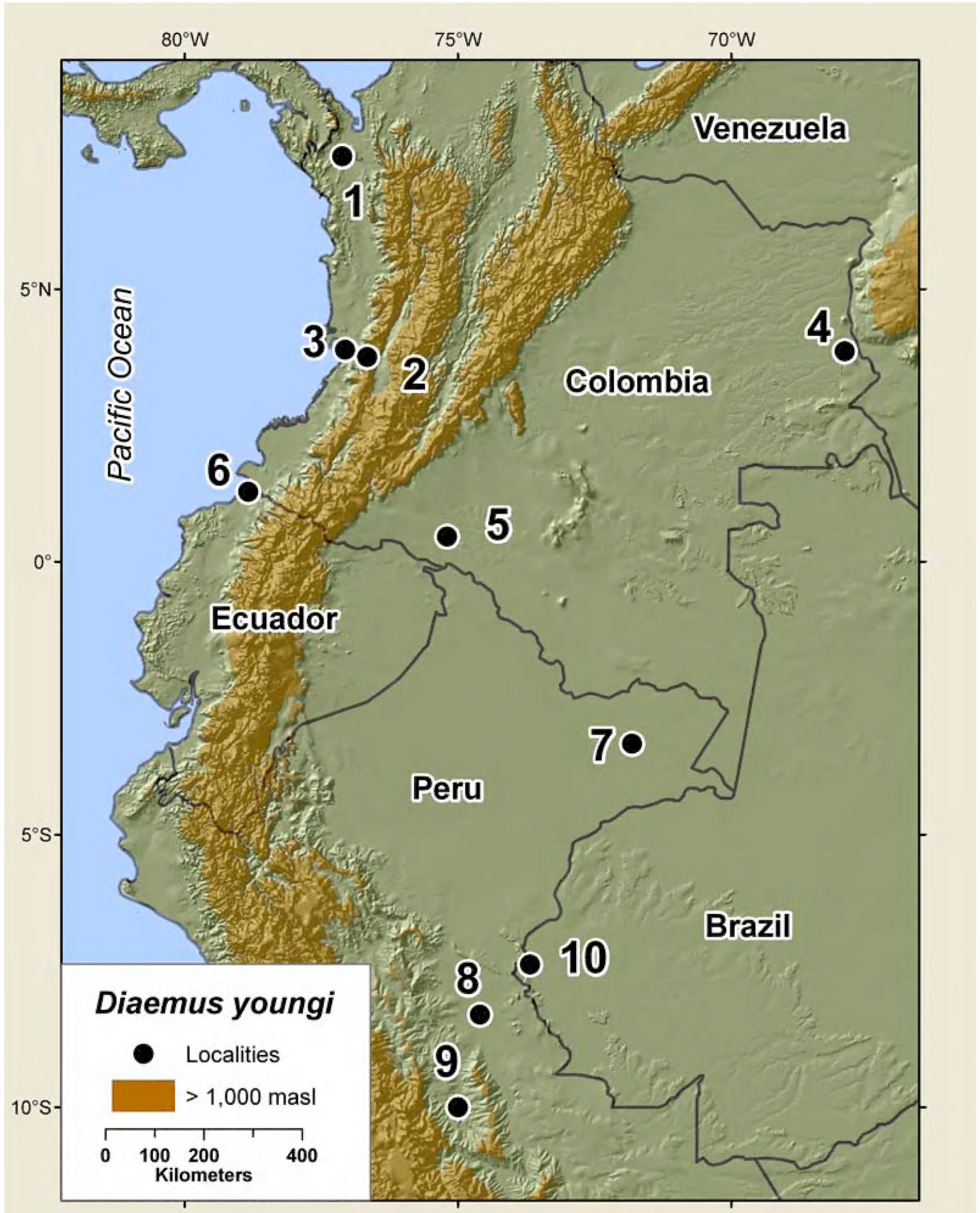

Figure 1. Records of *Diaemus youngi* in northwestern South America. Colombia: 1, Department of Chocó: Riosucio, Katíos National Park, Vda. Sautatá, 50-250 m, (ICN 7580); J. V. Rodríguez-M. PK. 2091 (Muñoz-S. and Alberico 2004). 2, Department of Valle del Cauca: Loboguerrero, Valle Atuncelo, Arid cannon of Río Dagua, 700 m, J. I. Borrero BV 65 (Muñoz-S. and Alberico 2004). 3, Buenaventura, Río Raposo, 30 m (Aellen 1970; Muñoz-S. and Alberico 2004). 4, Department of Guainia: Puerto Inirida, San Felipe (ROM 45304) (MaNIS 2006; 2007). 5, Department of Putumayo: Caquetá, Río Mecaya, 185 m. P. Hershkovitz, 3 Mar 1952. 1 female, FMNH 72142; record reported by de la Torre (1956) without a specific locality as "A young adult from Colombia, CNHM 72142". Ecuador: 6, Province of Esmeraldas: San Lorenzo, present study. Peru: 7, Department of Loreto: Pebas, 1 female, Jan 28, 1928. BM 28.7.21.64. Type of *D. y. cypselinus* (Thomas 1928). 8, Department of Ucayali: Yarinacocha, 1 male, Aug, 1946 (Sanborn 1949). 9, Biological Station "Panguana" (Hutterer et al. 1995). Brazil: 10, State of Acre, Parque Nacional da Serra do Divisor (Nogueira et al. 1999).

Check List 2007: **3**(3)
ISSN: 1809-127X

NOTES ON GEOGRAPHIC DISTRIBUTION

Cabrera and Yepes (1940) mentioned the presence of *Diaemus youngi* in the Ecuadorian Amazon, without indicating voucher specimens, with the following statement: "*Aún tratándose de una especie netamente amazónica, se consideran dos formas geográficas distribuyéndose la típica desde las Guayanas hasta el curso superior del río Amazonas, mientras más al oeste y ya en la parte oriental de Perú y Ecuador se localiza la subespecie* Diaemus youngi cypselinus" (p. 65). Based on this information, this species has been reported as probable for the Ecuadorian Amazon (e.g. Albuja 1999; Tirira 1999; 2007), although no publication suggested the presence of this species in the western versant of the Ecuadorian Andes (Albuja 1999; Eisenberg and Redford 1999; Emmons 1999; Tirira 1999; 2007). Cabrera and Yepes (1940) mentioned that due to the lack of extensive studies in the Neotropics, some species distributions were extended in their work: "*A la compilación natural de su estudio formal, se une la dificultad de que muchas zonas aún no han sido suficientemente exploradas y por lo tanto debe suplirse su respectivo conocimiento zoogeográfico mediante determinadas generalizaciones siempre mesuradas o por algunas suposiciones de cierto fundamento, a fin de suprimir en lo posible las soluciones de continuidad que se presentan en el área abarcada por ciertas especies o subespecies de amplia dispersión geográfica*" (p. 9). It seems likely that the distribution of *Diaemus youngi* in Cabrera and Yepes (1940) was a generalization, because the closest locality to the Ecuadorian Amazon was the type-locality of *D. youngi cypselinus* in Pebas, in northeastern Peru (Thomas 1928). Additionally, there are no voucher specimens of the species in 26 worldwide museum collections that archive Ecuadorian mammals (Carrera 2007). Even those where Angel Cabrera worked (Museo Nacional de Ciencias Naturales, España; Museo de La Plata, Argentina; and Museo Argentino de Ciencias Naturales "Bernardino Rivadavia") do not have Ecuadorian specimens of *Diaemus*. Moreover, by 1940 only 10 specimens were known to exist in collections: 7 from Brazil, 1 from Guyana, 1 from Peru and 1 from Venezuela (Sanborn 1949).

Specimens of *Diaemus youngi* are rare in scientific collections. In a search of the museum databases in MaNIS (2006; 2007) 40 specimens from 10 countries deposited in 8 museums were available. Additionally, the AMNH (2006; 2007) contains 36 specimens from 5 countries, mostly from Trinidad and Tobago (22 specimens). However, collections of the two other species of vampire bats are more numerous. A total of 183 specimens of *Diphylla ecaudata* and 2,280 specimens of *Desmodus rotundus* where allocated using the databases MaNIS (2006; 2007) and AMNH (2006; 2007). *Diaemus youngi* forms colonies (up to 30 individuals) in hollow trees and caves (Goodwin and Greenhall 1961; Greenhall and Schutt 1996). Some of the largest series of specimens came from these aggregations, e.g. in 1988, 4 specimens of the AMNH from Trinidad and Tobago were collected in a hollow tree (AMNH 2006; 2007). Additionally, *D. youngi* seems to be associated with human constructions; 10 out of 11 specimens collected in Paraguay were associated with buildings (López-González et al. 1998), and in eastern Peru *D. youngi* was collected near human inhabitations (Hutterer et al. 1995). These findings are congruent with the Ecuadorian specimen here reported.

Acknowledgments

This paper is dedicated to the memory of our friend René Fonseca. Our special thanks to D. Verzi of Museo de La Plata, Argentina (MLP), and O. Vaccaro of Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN) for confirming the absence of Ecuadorian specimens of *Diaemus youngi* in their collections. S. Solari read an early version of the manuscript and made invaluable suggestions. S. Burneo, curator of Museo de Zoología, Pontificia Universidad Católica del Ecuador (QCAZ) helped with the logistics for the field work. Special thanks to the curators of the 26 museums that provided data to JPC for his study. We thank members of the 2001 Sowell Expedition that captured the specimens here reported: R. Fonseca, J. Higginbotham, F. Hoffmann, D. Parish, C. Phillips, and L. Richardson.

NOTES ON GEOGRAPHIC DISTRIBUTION

Literature cited

Aellen, V. 1970. Catalogue raisonné des chiroptéres de la Colombie. Revue Suisse de Zoologie 77: 1-37.

Aguiar, L. M. S., W. R. Camargo, and A. S. Portella. 2006. Occurence of white-winged vampiro bat, *Diaemus youngi* (Mammalia, Chiroptera), in the Cerrado of Distrito Federal, Brazil. Revista Brasileira de Zoologia 23(3): 893-896.

Albuja V., L. 1999. Murciélagos del Ecuador. Second edition. Quito: Cicetrónic Compañía Limitada Offset, ii + 288 p.

AMNH. 2006; 2007. Specimen database of the department of Mammalogy. Electronic database accessible at: http://research.amnh.org/mammalogy/databases.php. American Museum of Natural History, New York, USA. Captured on: June 13, 14, 2006, May 27, 2007.

Cabrera, A. and J. Yepes. 1940. Historia natural Ediar. Mamíferos Sud-Americanos (vida, costumbres y descripción). Buenos Aires: Compañía Argentina de Editores. 370 p.

Carrera, J. P. 2007. Relational Database for Ecuadorian mammals deposited in museums around the World. Masters Thesis, Museum Sciences, Texas Tech University. ix + 51 p.

de la Torre, L. 1956. The dental formula of the bats of the genus *Diaemus*. Proceedings of the Biological Society of Washington 69: 191-192.

Eisenberg, J. F. and K. H. Redford. 1999. Mammals of the Neotropics. The central Neotropics. Volume 3. Ecuador, Peru, Bolivia, Brazil. Chicago: The University of Chicago Press. x + 609 p.

Emmons, L. H. 1999. Mamíferos de los bosques húmedos de América tropical. Una guía de campo. Santa Cruz de la Sierra: FAN Bolivia. xv + 298 p.

Goodwin, G. G. and A. M. Greenhall. 1961. A review of the bats of Trinidad and Tobago. Descriptions, rabies infection, and ecology. Bulletin of the American Museum of Natural History 122: 187-302.

Greenhall, A. M. and U. Schmidt (ed.). 1988. Natural history of vampire bats. Boca Ratón: CRC Press. 246 p.

Greenhall, A. M. and W. A. Schutt, Jr. 1996. *Diaemus youngi*. Mammalian Species 533:1-7.

Hutterer, R., M. Verhaagh, J. Diller, and R. Podloucky. 1995. An inventory of mammals observed at Panguana Biological Station, Amazonian Peru. Ecotropica 1(1):3-20.

Koopman, K. F. 1988. Systematics and distribution, p. 7-17 in A. M. Greenhall and U. Schmidt (ed.). Natural History of Vampire Bats. Boca Ratón: CRC Press.

López-Forment, W. and G. Téllez-Girón. 2005. *Diaemus youngi* (Jentink, 1893), p. 194-195 in G. Cevallos and G. Oliva (ed.). Los Mamíferos Silvestres de México. México: Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Fondo de Cultura Económica.

López-González, C., S. J. Presley, R. D. Owen, M. R. Willig, and I. Gamarra de Fox. 1998. Noteworthy records of bats (Chiroptera) from Paraguay. Mastozoología Neotropical 5(1): 41-45.

Nogueira, M. R., A. Pol, and A. L. Peracchi. 1999. New records of bats form Brazil with a list of additional species for the chiropteran fauna of the state of Acre, western Amazon Basin. Mammalia 63(3): 363-368.

MaNIS. 2006; 2007. Mammal Networked Information System. Electronic database accessible at: http://manisnet.org/manis/portals.html. Captured on: May 30, June 13, 14, 2006, May 27, 2007.

Muñoz-S., Y. and M. Alberico. 2004. Catálogo de mamíferos en el Chocó biogeográfico, p. 559-597 in J. O. Rangel Ch. (ed.). Colombia Diversidad Biótica IV El Chocó Biogeográfico / Costa Pacífica. Bogotá: Universidad Nacional de Colombia.

Sanborn, C. C. 1949. Mammals from the Rio Ucayali, Peru. Journal of Mammalogy 30(3): 277-288.

Swanepoel, P. and H. H. Genoways. 1979. Morphometrics, p. 13-106 in R. J. Baker, J. K. Jones and D. C. Carter (ed.). Biology of Bats of the New World Family Phyllostomidae. Part III. Lubbock: Texas Tech University.

Tandler, B., K. Toyoshima, and C. J. Phillips. 1990. Ultrastructure of the principal and accessory submandibular glands of the common vampire bat. American Journal of Anatomy 189(4): 303-315.

Tandler, B. and C. J. Phillips. 2002. Ultrastructure of the submandibular gland of the rare white-winged vampire bat, *Diaemus youngi*. European Journal of Morphology 40(4): 253-256.

Thomas, O. 1928. The Godman-Thomas expedition to Peru.-VII. On mammal obtained by Mr. Hendee at Pebas and Iquitos, Upper Amazons. Annals and Magazine of Natural History 2: 285-294.

Tirira, D. 1999. Mamíferos del Ecuador. Publicación especial 2. Quito: Centro de Biodiversidad y Ambiente. Pontificia Universidad Católica del Ecuador. xiv + 392 p.

Tirira, D. 2007. Guía de campo de los mamíferos del Ecuador. Quito: Ediciones Murciélago Blanco. 576 p.

Received May 2007
Accepted July 2007
Published online August 2007